From: Allen, Elizabeth
To: POULSEN Mike
Subject: RE: Portland Harbor BERA Ecological TPH TRV derivation
Date: Monday, April 20, 2015 2:37:00 PM

Well, it begs the question of whether any of the other C10-C12 concentrations are correct. Because the reported HQ at Willbridge is 150. But right now, I can't say I have a lot of confidence that the C10-C12 concentrations used in the BERA are correct…

From: POULSEN Mike [mailto:POULSEN.Mike@deq.state.or.us]
Sent: Monday, April 20, 2015 1:45 PM
To: Allen, Elizabeth
Subject: RE: Portland Harbor BERA Ecological TPH TRV derivation

Elizabeth –

I'll let you decide whether I should send this information to Burt now, or wait. I tracked down the source of Table 6-4 from the draft BERA that I was using. It turns out it is from Attachment 5 of Appendix G to the draft RI. It would have been nice if this information was included in the header, but if I was paying attention I would have written that in myself. Anyway, that pointed me to Attachment 5 of the final BERA. The new version of the table is now Table 7-4. So the revised problem statement is: The TPH fraction information in final BERA Attachment 5, Table 7-4, does not match the fraction data shown in the database used to calculate HQs. This is not an issue of differences between the draft and final, it is an issue of internal inconsistency that is present in both the draft and final documents.

- Mike

From: Shephard, Burt [mailto:Shephard.Burt@epa.gov]
Sent: Monday, April 20, 2015 12:12 PM
To: POULSEN Mike
Cc: Allen, Elizabeth
Subject: RE: Portland Harbor BERA Ecological TPH TRV derivation

Mike,

What are you looking at??? And where are you getting your information??? And why are we discussing a 6 year old draft final BERA in any event since we have a final, approved BERA???

Table 6-4 of the draft final BERA is titled "Table 6-4. Minimum Detectable Difference by Endpoint" and describes detectable differences in the survival and biomass proportions of the four sediment toxicity endpoints. It has nothing to do with TPH. Table 6-4 of the final, approved BERA is titled "Table 6-4. Comparative Agreement Among Clam and Other Invertebrate Toxicity Tests Based on Survival Endpoint". It also has nothing to do with TPH. I showed Elizabeth both the draft final and final BERA databases for analytical data on TPH fractions. At the Gasco TZW site, the analytical data are identical between the draft final and final BERA databases, although admittedly the C10 – C12 fractions should probably be better labeled as diesel range, as opposed to gasoline range TPH fractions. As such, since I cannot find the information you are asking about, I cannot help you. The

questions you are asking are analytical chemistry questions, or post-processing questions of the analytical chemistry results. Your answers are most likely in the RI report, not the BERA.

Also, since I am trying to finish a review of a biological opinion on Idaho's water quality standards under a court mandated deadline, I cannot be wasting my time on wild goose chases if you cannot point me to the information or TPH fraction definition in question.

Best regards,

Burt Shephard
Risk Evaluation Unit
Office of Environmental Assessment (OEA-095)
U.S. Environmental Protection Agency, Region 10
1200 6th Avenue
Seattle, WA 98101

Telephone: (206) 553-6359
Fax: (206) 553-0119

e-mail: Shephard.Burt@epa.gov

"Facts are stubborn things"
- John Adams

From: POULSEN Mike [mailto:POULSEN.Mike@deq.state.or.us]
Sent: Monday, April 20, 2015 8:45 AM
To: Shephard, Burt
Cc: Allen, Elizabeth
Subject: RE: Portland Harbor BERA Ecological TPH TRV derivation

Thanks, Burt. Your table helps me focus in on my fundamental question, and I will try to be more explicit than I was in my earlier emails below. My first understanding of the TPH fraction screening came from Table 6-4 of the 2009 draft BERA. Footnote c explains how the concentrations of fractions were calculated from the TPHg concentration. The 2009 results do not match the results in the final 2013 BERA. For convenience, I put everything in ug/L in the following comparison table.

		2009 Draft BERA			2013 Final BERA	
	TRV (ug/L)	Fraction of TPH	Conc. (ug/L)	HQ	Conc. (ug/L)	HQ
TPHg	NV		4,000		4,000	
Aliphatic C4-C6	128	0.359	1,436	11	940	7
Aliphatic C6-C8	54	0.236	944	17	230	4
Aliphatic C8-C10	9.5	0.058	232	24	8	0.8
Aliphatic C10-C12	2.6	0.002	8.0	3	1,400	540

Aromatic C8-C10	212	0.142	568	3	570	3

It appears that the concentrations assigned to each aliphatic fraction have shifted. This has a large impact on some of the calculated HQs. The big question is whether aliphatic C10-C12 is 0.2% of TPHg, or 36% of TPHg. I can't tell if this was an error in the 2009 draft BERA or in the new TZW database. Old Table 6-4 was explicit about the proportions of TPH fractions used to calculate concentrations. Is there a place in the final BERA where the conversion is documented? Or can you find it in the TZW database?

I don't think I'm comfortable with the proportions of fractions used by LWG in their evaluation, and I'm also interested in the heavier MW aromatic fractions, but the main issue now is identifying exactly what was done. It would be great if you can dig into this a little more. Thanks.

- Mike

-----Original Message-----
From: Shephard, Burt [mailto:Shephard.Burt@epa.gov]
Sent: Friday, April 17, 2015 5:47 PM
To: Allen, Elizabeth
Cc: POULSEN Mike
Subject: RE: Portland Harbor BERA Ecological TPH TRV derivation

The source of the 540 hazard quotient for the C10 - C12 aliphatic TPH fraction in the transition zone water at NW Natural is as follows.

Analytical chemistry data is in the final BERA analytical chemistry database file 2013-12-16_Final BERA_Attachment 4_Part B.xls A JPG picture of the pertinent part of the TZW tab of the file is attached, with the concentration of the C10 - C12 aliphatic TPH fraction in Gasco TZW location GS07BTR, sample ID LWG2-T30-GS7B highlighted in yellow. That concentration is 1.4 mg/L, equivalent to 1400 µg/L.

The toxicity reference value for the C10 - C12 aliphatic TPH fraction is 2.6 µg/L, presented in BERA Table 6-43.

Dividing 1400 by 2.6 yields a hazard quotient of 538, rounded to two significant figures and reported as an HQ of 540 in Table-6-44 of the BERA.

Easy peasy.

Best regards,

Burt Shephard
Risk Evaluation Unit
Office of Environmental Assessment (OEA-095) U.S. Environmental Protection Agency, Region 10
1200 6th Avenue

Seattle, WA 98101

Telephone: (206) 553-6359
Fax: (206) 553-0119

e-mail: Shephard.Burt@epa.gov

"Facts are stubborn things"
- John Adams

-----Original Message-----
From: Allen, Elizabeth
Sent: Thursday, April 16, 2015 12:35 PM
To: Shephard, Burt
Subject: FW: Portland Harbor BERA Ecological TPH TRV derivation

Burt,

Here is the latest version of the ongoing email exchange between Mike and I. I will ask Kristine tomorrow to let DEQ know that EPA is happy to accommodate their request for further evaluation and consideration in the FS, but that DEQ needs to allocate the necessary resources, or it won't get done. Also, I suspect that she'll want this all wrapped up (very) sooner rather than later.

Thanks,

E

-----Original Message-----
From: POULSEN Mike [mailto:POULSEN.Mike@deq.state.or.us]
Sent: Tuesday, April 14, 2015 3:05 PM
To: Allen, Elizabeth
Subject: RE: Portland Harbor BERA Ecological TPH TRV derivation

We may have some petroleum GW plumes, but at a site like Gasco, the sediment is heavily contaminated by direct placement.

I have not been able to replicate the aliphatic C10-C12 HQ of 540 for Gasco. Looking at BERA Attachment 4 (referred from the end of BERA section 6.6.3.2), I was not able to find the TPH fraction or TPHgasoline data in Table 9-1. There is a summary of diesel data, though. Jennifer looked in the electronic data, and found both gasoline and diesel data for TZW samples. The headings indicated that the fraction data was calculated, not measured. This was explained in Table 6-4 of the 2009 draft BERA, but I don't see it explained in the 2013 final BERA. Assuming that a similar calculation was performed to develop concentrations for fractions, I was still not able to see how the HQ of 540 was calculated. I'm afraid I'm stuck for the moment.(b) (6), so I have not found out if we have actual fraction data in TZW for Gasco.

- Mike

-----Original Message-----
From: Allen, Elizabeth [mailto:allen.elizabeth@epa.gov]
Sent: Tuesday, April 14, 2015 10:49 AM
To: POULSEN Mike
Subject: RE: Portland Harbor BERA Ecological TPH TRV derivation

Thanks, I actually have no meetings scheduled for this afternoon. I didn't mean to imply whether or not narcosis from the other fractions was or wasn't ecologically significant. As I mentioned, there's individual versus population risks, but there is also a line-of-evidence approach for determining eco significance discussed in Section 11. I believe - but wouldn't bet my life on it - that eco significance requires more than a single line. I just would like us to maintain some level of consistency. One further question I forgot to raise - are these contaminants arising from groundwater plumes? If so, that just might make it easier, because the FS acknowledges that groundwater plumes weren't actually evaluated in the RI.

E

-----Original Message-----
From: POULSEN Mike [mailto:POULSEN.Mike@deq.state.or.us]
Sent: Tuesday, April 14, 2015 9:59 AM
To: Allen, Elizabeth
Subject: RE: Portland Harbor BERA Ecological TPH TRV derivation

Elizabeth -

I'm trying to catch Jennifer so she can join in the discussion. My first thought is that C10-C12 is listed as a contaminant of ecological significance for narcosis effects, so I think that says something. But our real question now concerns the other fractions. I see from BERA Table 11-3 that the aliphatic C10-C12 fraction had by far the highest HQ for TPH fractions taken at Gasco. I can see this as a line of evidence for selecting this fraction. I'm trying to check this result relative to the higher MW aromatic fractions that were not evaluated. I'll let you know what I find.

- Mike

-----Original Message-----
From: Allen, Elizabeth [mailto:allen.elizabeth@epa.gov]
Sent: Monday, April 13, 2015 3:51 PM
To: POULSEN Mike
Subject: RE: Portland Harbor BERA Ecological TPH TRV derivation

"Narcotic toxicity is often referred to as "baseline toxicity", as narcosis corresponds to the minimal level of toxicity exerted by any chemical. Chemicals with specific modes of toxic action are more toxic (i.e. require lower body burdens to elicit toxicity) than would be expected on the basis of narcotic toxicity."

So, is narcosis an ecologically significant risk?

-----Original Message-----
From: POULSEN Mike [mailto:POULSEN.Mike@deq.state.or.us]
Sent: Monday, April 13, 2015 11:34 AM
To: Allen, Elizabeth
Subject: Portland Harbor BERA Ecological TPH TRV derivation

Elizabeth -

Jennifer pointed me to the detailed derivation of TPH TRVs in the BERA. The table with TRVs gives the reference as EPA 2008, which is an April 11, 2008 letter. The letter is included starting on page 60 of 2450 in the BERA Attachment 1 EPA/LWG Comm2 file. Burt's write-up starts on page 91. I'm attaching the write-up in case you have a hard time finding the BERA files. Table 2 (there is no Table 1) shows the derivation of the TRVs, stating in the footnote that NA indicates the TRV would need to exceed maximum water solubility. This is the table that I modified in DEQ's comments on FS Section 2.

- Mike